

AMENDMENTS TO THE CLAIMS

Claims 1-30 (Canceled)

Claim 31 (Previously Presented): A process for synthesizing nanorods of a carbide of one metal M1 on a substrate, comprising the following steps:

- a) the deposition, on the substrate, of a layer comprising nanocrystals of oxide of the metal M1 and nanocrystals of oxide of at least one metal M2 different from the metal M1, the M1 metal oxide nanocrystals being dispersed within this layer;
- b) the reduction of the M1 and M2 metal oxide nanocrystals into corresponding metal nanocrystals; and
- c) the selective growth of the M1 metal nanocrystals.

Claim 32 (Previously Presented): The process according to claim 31, wherein step a) is carried out by reactive sputtering from a target consisting of the metals M1 and M2 by an oxygen plasma produced by an electron cyclotron resonance microwave plasma source.

Claim 33 (Previously Presented): The process according to claim 32, wherein said target comprises a mixture of the metals M1 and M2.

Claim 34 (Previously Presented): The process according to claim 32, wherein said target comprises several zones, adjacent to one another or separated from one another, at least one of these zones consisting of the metal M1, whereas the one or more other of these zones consist(s) of the metal or metals M2.

Claim 35 (Previously Presented): The process according to claim 31, wherein step b) is carried out by a hydrogen plasma produced by an electron cyclotron resonance microwave plasma source, the substrate being heated.

Claim 36 (Previously Presented): The process according to claim 31, wherein step c) is carried out by a plasma of at least one hydrocarbon produced by an electron cyclotron resonance microwave plasma source, the substrate being heated.

Claim 37 (Previously Presented): The process according to claim 31, wherein the metal M1 is selected from the group consisting of metals capable of reacting with organic molecules or radicals that are in gaseous form in order to form, with them, a metal carbide.

Claim 38 (Previously Presented): The process according to claim 37, wherein the metal M1 is at least one selected from the group consisting of chromium and molybdenum.

Claim 39 (Previously Presented): The process according to claim 31, wherein the metal or metals M2 are selected from the group consisting of metals utilized as catalysts in organic chemistry.

Claim 40 (Previously Presented): The process according to claim 39, wherein the metal or metals M2 are at least one selected from the group consisting of iron, nickel and cobalt.

Claim 41 (Previously Presented): The process according to claim 32, wherein said target comprises a stainless steel composed of iron and chromium, or of iron, chromium and nickel.

Claim 42 (Previously Presented): The process according to claim 40, wherein said target is biased with a negative voltage of -200 V or higher and preferably of between -400 and -200 V.

Claim 43 (Previously Presented): The process according to claim 41, wherein said oxygen plasma is maintained at a pressure of generally 10^{-3} mbar or below, and preferably between 10^{-4} and 10^{-3} mbar.

Claim 44 (Previously Presented): The process according to claim 35, wherein , in step b), the hydrogen plasma is maintained at a pressure of 10^{-2} mbar or below, and advantageously between 10^{-3} and 10^{-2} mbar, and the substrate is heated to a temperature ranging from 300 to 600°C.

Claim 45 (Previously Presented): The process according to claim 36, wherein , in step c), the hydrocarbon plasma is maintained at a pressure of 10^{-2} mbar or below, and preferably between 10^{-3} and 10^{-2} mbar, while the substrate is heated to a temperature of 600°C or higher, and preferably between 600 and 800°C.

Claim 46 (Previously Presented): The process according to claim 36, wherein the hydrocarbon or hydrocarbons used in step c) are at least one selected from the group consisting of alkanes, alkenes, alkynes, and ethylene.

Claim 47 (Previously Presented): The process according to claim 31, wherein the substrate is at least one selected from the group consisting of silicon, borosilicate glasses, quartz, metals and metal alloys.

Claim 48 (Previously Presented): A process for growing nanorods of a carbide of one metal M1 on a substrate, which consists in subjecting nanocrystals of the metal M1 dispersed within a layer of nanocrystals of at least one metal M2 different from M1, said layer being deposited beforehand on the substrate, to the action of a plasma of at least one hydrocarbon produced by an ECR microwave plasma source.

Claim 49 (Previously Presented): The process according to claim 48, wherein the metal M1 is selected from the group consisting of metals capable of reacting with organic molecules or radicals that are in gaseous form in order to form, with them, a metal carbide.

Claim 50 (Previously Presented): The process according to claim 49, wherein the metal M1 is at least one selected from the group consisting of chromium and molybdenum.

Claim 51 (Previously Presented): The process according to claim 48, wherein the metal or metals M2 are selected from the group consisting of metals utilized as catalysts in organic chemistry.

Claim 52 (Previously Presented): The process according to claim 51, wherein the metal or metals M2 are at least one selected from the group consisting of iron, nickel and cobalt.

Claim 53 (Previously Presented): The process according to claim 48, wherein the hydrocarbon plasma is maintained at a pressure of 10^{-2} mbar or below and preferably of between 10^{-3} and 10^{-2} mbar, while the substrate is heated to a temperature of 600°C or higher, and preferably of between 600 and 800°.

Claim 54 (Previously Presented): The process according to claim 48, wherein the hydrocarbon or hydrocarbons are at least one selected from the group consisting of alkanes, alkenes, alkynes, and ethylene.

Claim 55 (Previously Presented): The process according to claim 48, wherein the substrate is at least one selected from the group consisting of silicon, borosilicate glasses, quartz, metals and metal alloys.

Claims 56-61 (Canceled)